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EXAMINER	
GUTIERREZ, KEVIN C	
ART UNIT	**PAPER NUMBER**
2851	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/797,725	Applicant(s) KLOMP ET AL.	
	Examiner Kevin Gutierrez	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *23-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3-11-04 &8-03-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I in the reply filed on November 17, 2005 is acknowledged.

2. Claims 23-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 17, 2005.

Claim Objections

3. Claims 7, 12, 17, 18 and 20 are objected to because of the following informalities:

(a) Page 36, claim 7, "...claims 5..." The underlined text seems to contain a typographical error. Replace underlined text with --claim-- as suggested by the Examiner.

(b) The following fail to provide proper antecedent basis:

i. Page 36, claim 12 - "said thermal treatment"

ii. Page 37, claim 17 - "said lithographic projection apparatus"

iii. Page 37, claim 18 - "said projection apparatus"

iv. Page 38, claim 20 - "said door device"

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2-5, 7-9 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Sieradzki (5,486,080).

Regarding claim 1, Sieradzki discloses

- "at least one load lock (22a) constructed and arranged to transfer an object between a first environment (22a; load lock #1) and a second environment (40; vacuum chamber);
- an object handler (50; transfer station, 62; robot #1) comprising a handler chamber (40) in which said second environment prevails, said object handler and said at least one load lock being constructed and arranged to transfer said object (13; wafer) between said object handler and said at least one load lock (col. 4, lines 48-50); and
- a lithographic projection apparatus comprising a projection chamber (40; transfer and process chamber);

• wherein said handler chamber and projection chamber can communicate for transferring of said object between said handler chamber and said projection chamber (fig. 4, where **a-f** depicts transfer path), and wherein said load lock (22) comprises a load lock chamber which is provided with at least two mutually distinct object supports (30a, 30b; cassettes or carriers)."

Regarding claim 2, Sieradzki discloses "wherein said second environment (40) has a lower pressure (col. 4, lines 6-7, where **40** is a vacuum chamber) than said first environment (22a; col. 3, line 60, where load lock is at atmospheric pressure)."

Regarding claim 3, Sieradzki discloses "wherein said load lock further comprises evacuation devices (23a, 23b) constructed and arranged to evacuate said load lock chamber (col. 3, lines 14-16)."

Regarding claim 4, Sieradzki discloses "wherein said load lock further comprises door devices (23; isolation valves) constructed and arranged to close said load lock chamber during evacuation and to open said load lock chamber to permit said object to be positioned into said load lock chamber and to respectively permit said object to be removed from said load lock chamber (col. 4, lines 44-47)."

Regarding claim 5, Sieradzki discloses "wherein said load lock comprises volume decreasing devices constructed and arranged to decrease said gas volume (col. 4, lines 44-46, where pressure is being lowered, thus gas volume is decreased)."

Regarding claim 7, Sieradzki discloses "wherein said at least one of said object supports comprises a support plate of a size about equal to or larger than said object to be supported (col. 4, line 8, where cassette holds a plurality of wafers),

wherein a ceiling plate is provided above said at least one of said object supports, said ceiling plate having a size of about equal to or larger than said object (col. 4, line 8, where cassette has a top and bottom enclosure and holds a plurality of wafers); and

wherein said volume decreasing devices comprise a positioning device constructed and arranged to decrease the distance between said support plate and said ceiling plate prior to and/or during evacuation of said load lock chamber and to increase said distance between said support plate and said ceiling plate prior to said object being removed from or delivery to said at least one of said object supports (col. 3, lines 44-48, where increase and decrease of distance of supports are inherent due to venting and pumpdown of cassettes; col. 5, lines 47-52, where evacuation of load lock chamber is in communication with processing cassettes)."

Regarding claim 8, Sieradzki discloses "wherein said positioning devices are adapted to act on one of said support plate and said ceiling plate, while the other of said support plate and said ceiling plate is arranged in a stationary manner in said load lock chamber (col. 3, lines 44-48)."

Regarding claim 9, Sieradzki discloses "wherein said positioning devices are provided at sides of said load lock chamber, at the top of said load lock chamber, or at the bottom of said load lock chamber (col. 3, lines 3-5)."

Regarding claim 22, Sieradzki discloses all of the claimed limitations set forth in claim 1 and further discloses "wherein said object handler (50, 62) is integrated in

said load lock, so that said handler chamber (40) and said load lock chamber are a single unit (40; transfer and process chamber are isolated by valves **23**)."

6. Claims 1, 10, 11, 13, 14 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Fuse et al (5,217,501).

Regarding claim 1, Fuse et al disclose

• "at least one load lock (40; first load lock chamber) constructed and arranged to transfer an object (20; wafer) between a first environment (40) and a second environment (42; second load lock chamber);

• an object handler (70; handler) comprising a handler chamber (40) in which said second environment prevails, said object handler and said at least one load lock being constructed and arranged to transfer said object (20; wafer) between said object handler and said at least one load lock (col. 9, lines 12-17); and

• a lithographic projection apparatus comprising a projection chamber (44; third load lock chamber);

• wherein said handler chamber and projection chamber can communicate for transferring of said object between said handler chamber and said projection chamber (col. 9, lines 12-19), and wherein said load lock comprises a load lock chamber (42, 44) which is provided with at least two mutually distinct object supports (58, 59; carriers)."

Regarding claim 10, Fuse et al disclose "wherein said load lock includes a thermal treatment device constructed and arranged to bring said object to a

predetermined temperature or equalize said temperature across said object (col. 7, lines 56-59, where the wafer's temperature is made uniform)."

Regarding claim 11, Fuse et al disclose "wherein a said support plate (18; treatment boat) of at least one of said at least two object supports (58, 18) is provided with said thermal treatment device."

Regarding claim 13, Fuse et al disclose "wherein said thermal treatment device comprises lines (10; process tube) and a fluid pumping system constructed and arranged to pump fluid through said lines (col. 6, lines 33-36, where gas is carried out through tubes), said lines being arranged such that said lines are in thermal contact with said corresponding support plate (col. 6, lines 17-19)."

Regarding claim 14, Fuse et al disclose "wherein said lines are provided internally in one of said support plate and a wall of said load lock chamber (col. 6, line 8 and lines 17-19)."

Regarding claim 22, Fuse et al disclose all of the claimed limitations set forth in claim 1 and further discloses "wherein said object handler (70) is integrated in said load lock (40; first load lock), so that said handler chamber (40) and said load lock chamber are a single unit (Fig. 9, where 70 is in first load lock chamber 40)."

7. Claims 1, 5, 6 and 17-22 are rejected under 35 U.S.C. 102(e) as being anticipated by del Puerto et al (US 2003/0082466).

Regarding claim 1, del Puerto et al disclose

• "at least one load lock (107) constructed and arranged to transfer an object between a first environment (104; alignment load lock) and a second environment (106; wafer exchanger chamber);

• an object handler (109; robot) comprising a handler chamber (106) in which said second environment prevails, said object handler and said at least one load lock being constructed and arranged to transfer said object between said object handler and said at least one load lock ([0031], lines 14-16); and

• a lithographic projection apparatus comprising a projection chamber (111; lithography patterning chamber);

• wherein said handler chamber and projection chamber can communicate for transferring of said object between said handler chamber and said projection chamber ([0032], lines 4-7), and wherein said load lock (110) comprises a load lock chamber (111) which is provided with at least two mutually distinct object supports (112, 113)."

Regarding claim 5, del Puerto et al disclose "wherein said load lock comprises volume decreasing devices constructed and arranged to decrease said gas volume ([0031], lines 7-10)."

Regarding claim 6, del Puerto et al disclose "wherein said volume decreasing devices ([0031], lines 7-10) are adapted to decrease said gas volume adjacent said surface of said object positioned on at least one of said object supports ([0031], lines 14-16, where wafers are transferred in and out of wafer exchange chamber in different pressure-environments)."

Regarding claim 17, del Puerto et al disclose "wherein said projection chamber is a vacuum chamber and wherein said lithographic projection apparatus comprises vacuum devices constructed and arranged to establish a vacuum in said vacuum chamber ([0031], lines 7-11; [0033], line 3)."

Regarding claim 18, del Puerto et al disclose

- "a radiation system constructed and arranged to provide a beam of radiation ([0004], lines 15-17);
- a support structure to support a patterning devices, said patterning devices serving to pattern said beam according to a desired pattern ([0006], line 5-9);
- a substrate table for holding a substrate [0004], line 10); and
- a projection system constructed and arranged to project said patterned beam onto a target portion of said substrate ([0004], lines 11-12)."

Regarding claim 19, del Puerto et al disclose "wherein said object is a semiconductor wafer ([0004], lines 5)."

Regarding claim 20, del Puerto et al disclose "wherein said door device comprises a first door (106; gate valve) towards said first environment and a second door (110; gate valve) towards said second environment."

Regarding claim 21, del Puerto et al disclose "further comprising two or more of said load locks (104, 105, 114)."

Regarding claim 22, del Puerto et al disclose all of the claimed limitations set forth in claim 1 and further discloses "wherein said object handler (109) is integrated

in said load lock, so that said handler chamber (106) and said load lock chamber are a single unit ([0031], lines 12-16)."

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fuse et al in view of Hirayanagai (US 2004/01019152).

Fuse et al disclose all of the claimed limitations except "wherein two of said at least two object supports are placed one above the other, and wherein said thermal treatment device is positioned between said two of said at least two object supports."

However, having "wherein two of said at least two object supports are placed one above the other, and wherein said thermal treatment device is positioned between said two of said at least two object supports" is known to the art as it is evident by the teaching of Hirayanagai (See abstract, where temperature of cassettes in library can be controlled by circulating fluid in conduits throughout the cassette shelves). Thus, it would have been obvious to one ordinary skilled in the art at the

time the invention was made to modify Fuse et al in a manner described above for at least the purpose to efficiently process a large quantity of substrates.

10. Claims 15 and 16 rejected under 35 U.S.C. 103(a) as being obvious over del Puerto et al.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding claim 15, del Puerto et al disclose a load lock chamber with an evacuation device ([0031], lines 7-11). Del Puerto et al does not disclose "wherein said load lock chamber comprises a top wall and a bottom wall."

However, it is inherent for a chamber to comprise of a top and bottom wall, which an enclosure is necessary to utilize a vacuum space as disclosed by del Puerto et al. Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the load lock chamber of del Puerto et al for at least the purpose of maintaining a vacuum space for transferring of the wafer.

Regarding claim 16, del Puerto et al further discloses "wherein said venting opening and said evacuation opening are arranged substantially centrally with respect

to said object supports, said object supports being arranged one above the other (204, 205, 206; wafer supports; [0040], lines 9-11)."

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following discloses process chambers in combination with load-lock mechanisms: Saki (5,376,212), Kawahara et al (US 2002/0081175), and Hattori et al (US 2002/0074635).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Gutierrez
Examiner
Art Unit 2851

William Perkey
Primary Examiner

December 6, 2005